Scratching the Surface: Poison Ivy and other Allergic Rashes

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2009

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Talking points

• What is allergic contact dermatitis?
• Common causes
• How do we diagnose it?
• How do we treat it?
• “Myths and legends” about ACD
Useful definitions

• Allergy:
  • exaggerated reaction of immune system following contact with certain foreign substances

• Allergen:
  • substance that causes or elicits the allergic reaction

• Eczema:
  • Red, itchy, weepy patches of skin. Can occur in different conditions, including allergic contact, irritant contact and atopic dermatitis
What is allergic contact dermatitis?

• An *allergic* reaction to something that comes in *contact* with the skin
Who gets allergic contact dermatitis?

• Potentially anyone
  • Genetic predisposition

• Atopy: tendency towards developing allergies, asthma, hay fever, dermatitis
How does allergic contact dermatitis happen?

• Two step process
  • Becoming allergic (sensitization or induction)
  • Developing the rash after re-exposure (elicitation)
Step 1: Becoming allergic

• *Sensitization*: first contact
  • Must first contact an allergen to develop the allergy
  • Certain conditions may predispose to development of allergy
    • Open skin: loss of barrier function
Step 2: developing the rash

- Once sensitized, immune system “remembers” the allergy
- When contact with allergen recurs (re-challenge), immune memory recalls allergy and sets allergic reaction in motion: *elicitation*
The rash: signs and symptoms

- **Acute allergic contact dermatitis**
  - itchy
  - red
  - crusting / oozing
  - blisters
Signs and symptoms

• **Chronic allergic contact dermatitis**
  • +/- itch
  • less red
  • hyperpigmentation common
  • thickened skin
  • fewer blisters, may see more cracking
Signs and symptoms

- ACD *usually* affects the skin at the site of contact with allergen
- ACD is a delayed-type hypersensitivity reaction
  - Symptoms develop 24-48+ hrs after exposure
  - With repeated exposure, reactions are quicker and more intense
  - Rash lasts 7-14 (or more) days
  - Usually no hives, wheezing
Poison Ivy: the perfect contact dermatitis

- Allergic reaction to oil (urushiol) in plant
- Rash appears 1-4 days after exposure
- Can last 7-21 days
- Symptoms range from mild itch to severe itch with blisters
- Linear pattern suggests “outside job”
Poison ivy in Burlington
Frequent questions about poison ivy

• Can the rash be spread in the blister fluid?
  • NO! Only contact with the oil will spread the rash

• I didn’t go outside. How did I get it?
  • Do you have a dog?

• I didn’t see any leaves.
  • Urushiol is present in the vines and can be spread by contact with them, via burning
What causes allergic contact dermatitis?

• Usually small molecular weight chemicals
• Foods and environmental allergens (dust, molds, pets, etc) more likely to cause immediate-type hypersensitivity reactions
  • sneezing, cough, hives
Common allergens
What are they? Where are they?

- Nickel and other metals
- Fragrances
- Preservatives
- Compounds in rubber products
- Topical antibiotics (neomycin, bacitracin)
- Plants
Nickel

- Allergy to nickel one of most common allergies
  - Up to 15% in US
  - Incidence increasing
- Exposure to nickel common in jewelry
  - Body piercing thought to contribute
Nickel: where is it?

- Jewelry
  - May be present in <24 kt gold, white gold, silver, steel
  - 24 kt gold, platinum, titanium should be okay
- Metal objects: paperclip, keys, coins
- Clothing: jean snaps, zippers, eyelets
- Medical devices including artificial joints, pacemakers
Body piercing and contact dermatitis
Dimethylglyoxime test

Pink color indicates presence of nickel
Nickel in Food

- Cocoa & dark chocolate
- Beer
- Oatmeal
- Oysters
- Dry legumes
- Asparagus
- Hazelnuts
- Sunflower seeds
- Gelatin
- Soybeans
- Baking powder
Dietary nickel

- Whether or not dietary nickel is a problem for allergic persons is controversial
  - ? worsens hand eczema
- Role of dietary nickel not fully understood
  - no recommended RDA
- Nickel in some multivitamins
Recommendations for nickel allergy

- Avoid exposure to nickel-containing metals
  - Cover metals with plastic, etc.
  - If piercing, use non-nickel containing metals
  - Watch for reactions to other metals: cobalt, chromium
- Low-nickel diet may benefit some, but not often recommended
- Legislation to minimize nickel exposure in common items
Fragrances

- Allergies to fragrances common
  - Second most common allergy
  - Up to 10% patients in allergy clinics
- Many different components of fragrances can cause allergy
  - Testing usually done in “mixes”
- Can react both to natural and synthetic fragrances
Where are fragrances found?

- Most personal care products contain fragrances
  - perfumes, colognes
  - essential oils
  - household products (room fresheners, candles)
  - medicated creams, medicaments
“Unscented” is not “fragrance-free”

- “Unscented” products may have masking fragrances
- Even “fragrance-free” products can have traces of fragrances if not used for that purpose
Fragrance allergy

- Allergic reactions to fragrances most common on face, neck, skin around the eyes
- Some fragrances are used as flavoring agents and rarely cause allergic reactions when ingested
  - cinnamon flavorings
- Performing a “use test” recommended when using a new product
  - Labels rarely identify specific fragrances
Fragrance allergy
Preservatives

• Widely used in cosmetic, pharmaceuticals and industrial applications to prevent bacterial and fungal overgrowth

• Commonly used preservatives
  • formaldehyde
  • formaldehyde-releasing chemicals
  • methylchloroisothiazolinone/methylisothiazolinone
  • methylbromoglutararonitrile phenoxyethanol
  • parabens
Formaldehyde-releasing preservatives

- Chemicals that release formaldehyde upon contact with the skin
  - Quaternium-15
  - DMDM hydantoin
  - Imidazolidinyl urea
  - Diazolidinyl urea
  - 2-bromo-2-nitropropane-1,3-diol
- Can be allergic to these individually or cross-react if allergic to formaldehyde
Formaldehyde: possible exposures

- Cosmetics (shampoos)
- Household products
- Medications
- Leather tanning agent
- Photography chemicals
- Textile finishes
- Paints and inks
- Paper manufacturing
- Pathology fixatives

- Embalming solutions
- Rubber industry
- Fertilizers
- Plastics and resin mfg
- Metalworking fluids
- Wood composites
- Insulation (urea formaldehyde foam)
- Dialysis
Preservative allergies

- Reactions can occur at site of contact or be relatively diffuse
- Testing is usually needed to detect and confirm allergy
- Avoidance is necessary once sensitized
Rubber compounds

- Reactions to latex rubber products either
  - Immediate-type reactions to latex proteins
    - hives, itching, wheezing or anaphylaxis
  - Delayed-type reactions to chemical additives in rubber products
    - eczematous reactions
- Synthetic rubber products (such as nitrile) can contain allergenic accelerators and other chemicals
Latex allergy

- Immediate-type hypersensitivity reactions to latex increased dramatically in the 1990s with institution of “universal precautions”
- Reactions originally to powdered latex gloves
  - Latex proteins adhere to powder and are aerosolized
  - Reactions ranged from itching to death
- Incidence has improved through elimination of powder, production of “better” gloves
Latex allergy
Rubber allergens

• Common rubber allergens include
  • thiurams
  • thiazoles
  • carbamates

• Exposure to rubber allergens can be from anything “rubbery”
  • Less obvious sources include disinfectants, insecticides, adhesives, personal care products, cutting oils
Carbamates and thiurams...
“Bleached Rubber Syndrome”

Use of chlorine bleach makes carbamates in elastic more allergenic
Topical antibiotics

- Allergic reactions to topical antibiotics relatively common in US
  - neomycin
  - bacitracin
- Reactions may be confused for infection
- Use of topical antibiotics on open skin (dermatitis) may increase chance of causing allergy
- Two antibiotics may cross react
Bacitracin allergy
Plants

• Common plant allergens
  • Alstroemeria
  • Chrysanthemum
  • Primrose
  • Tulip

http://upload.wikimedia.org/wikipedia/commons/a/a7/Alstroemeria_aurantiaca.jpg
Testing for allergic contact dermatitis

- Clinical suspicion may suggest ACD, but testing needed to prove it
  - Experienced dermatologists predict relevant allergens only 50% of time
- Skin biopsy does not give info as to likely cause
- Patch testing is gold standard
Patch testing is not prick testing

- Prick (or scratch) testing tests for immediate-type hypersensitivity reactions
  - detects allergies to foods, trees, grasses, molds, pets
- Patch testing tests for delayed-type hypersensitivity reactions
  - Chemicals, metals, preservatives, fragrances, etc.

Images from www.nosneezes.com
Patch testing with T.R.U.E. TEST
T.R.U.E. TEST
Patch Test Reading
96 hour patch testing results
How do we treat allergic contact dermatitis

- Rash can be treated with cool compresses, oatmeal bathes, calamine lotion
  - Avoid Caladryl or any product with topical Benadryl (potential sensitizer)
  - Oral antihistamines generally OK
- Topical corticosteroids
- Oral corticosteroids sometimes needed
Treating the allergy

- Once diagnosed, avoidance is the only “treatment”
- There are no consistently effective desensitization methods for delayed-type hypersensitivity reactions
  - No “allergy shots”
- Read labels
• Be sure what you *think* you are using and what you really *are* using are the same thing!
Create Product List Free of Patient's Allergens
Choose from the allergens below. See Instructions for details.

Ingredients:
- 1-(4-isopropylphenyl)-3-phenyl-1,3-propanedione (eusolex 8020)
- 1,2,6 hexanetriol
- 1,3,5 tris (2-oh ethyl) hexahydrotriazine
- 1,4-butanediol dimethacrylate

Selected Ingredients:
- fragrance

Submit  Remove  Helpful Hints  Instructions
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<td>DHS EXTRA BODY CONDITIONING RINSE</td>
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<td>FREE AND CLEAR CONDITIONER</td>
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Interesting cases to share
Garlic
Top 10 reasons why “I can’t be allergic to XYZ”

10. The label says XYZ is hypoallergenic
   Yes, and it also says “dermatologist-approved”

9. I never put XYZ there…
   Reactions may or may not occur at the site of contact with the allergen
More of the top 10

8. I don’t have allergies…
   Contact dermatitis can be the first and only allergy to develop

7. I’m too old to develop allergies
   The incidence of ACD increases with age
More of the top 10

6. **XYZ is inert**…
   Reactions to gold and other “inert” metals, even corticosteroids are increasingly more common

5. I have atopic dermatitis and can’t become allergic
   Open skin in conditions such as AD may actually promote sensitization
More of the top 10…

4. I haven’t used XYZ for several days…
   ACD is a delayed-type reaction and may not react for several days after exposure

3. I only used a little…
   Elicitation of reactions in sensitized individuals takes only minute amounts of the allergen
And my favorites…

2. I’ve used XYZ for years…. Allergies can develop at any point, without obvious provocation….and products can and do change. Anything “new and improved” is new and changed…

1. It’s all natural
So is poison ivy…and some “natural” products are preserved with very unnatural preservatives…